

**METHOD AND APPARATUS FOR ADJUSTING THE RESONANCE FREQUENCY  
OF A MICROELECTROMECHANICAL (MEMS) RESONATOR USING TENSILE  
STRAIN AND APPLICATIONS THEREOF**

5

ABSTRACT OF THE DISCLOSURE

A method for varying the resonance frequency of a resonator beam is disclosed. The method comprises first manufacturing a resonator beam having a first end and a second end.

10 The resonator beam is suspended above a substrate by the first end and the second end. At least one end of the resonator beam is connected to an actuator that applies an actuation force to the resonator beam to apply tensile strain or compressive strain onto said resonator beam. By varying the amount of actuation force, the resonance frequency of the resonator beam may be tuned. Additionally, by varying the magnitude and direction of the actuation force,  
15 the resonator beam may be used as a temperature sensor or a temperature compensated resonator.